REMARKS/ARGUMENTS

This Amendment is being filed in response to a final Official Action following a Request for Continued Examination (RCE) of the above-identified application. Initially, the final Official Action objects to Claims 1 and 11 for including a number of informalities, responsive to which Applicant has amended the respective claims as suggested in the Official Action. In addition to the foregoing, the final Official Action continues to reject all of the pending claims, namely Claims 1-5 and 11-15, under 35 U.S.C. § 103(a) as being unpatentable over US Patent Application Publication No. 2004/0146014 to Hammons, Jr. et al. As explained below, however, Applicant maintains that the claimed invention is patentably distinct from Hammons and, accordingly, traverses this rejection of the claims. In view of the amendments to the claims and the remarks presented herein, Applicant respectfully requests reconsideration and allowance of all of the pending claims of the present application. Alternatively, as the amendments to the claims and remarks presented herein do not raise any new issues or introduce any new matter, Applicant respectfully requests entry of this Amendment for purposes of narrowing the issues upon appeal.

As explained in response to the last non-final Official Action, in contrast to independent Claim 1, Hammons does not teach or suggest a decoder for directly combining received values of space-time encoded data such that the combined values form a real-valued vector free of imaginary component parts, and for detecting values of symbols of which the space-time encoded data is formed, as a function of the real-valued vector into which the received values are directly combined. Hammons does briefly disclose a space-time decoder for decoding space-time codes. Hammons does not, however, disclose the manner by which the decoder decodes those codes, much less in a manner corresponding to that of amended independent Claim 1. Instead, as indicated above, Hammons is concerned with the design of space-time codes for multi-antenna communication systems. In fact, Hammons explicitly states that, "[t]he present invention is concerned primarily with the design of space-time codes rather than the signal processing required to decode them. In most cases, the decoding employs known signal processing used for maximum likelihood reception." Hammons, paragraph 56.

The Official Action again cites equations (1) and (2) of Hammons as support for the claim recitation of directly combining received values of space-time encoded data such that the combined values form a real-valued vector free of imaginary component parts, the Official Action now alleging that those equations inherently disclose a real-valued vector. The Official Action concedes that Hammons does not teach or suggest a decoder for detecting values of symbols of which the space-time encoded data is formed, based upon the real-valued vector into which the received values are directly combined. But the Official Action alleges that BPSK symbols do not have complex values, and for the case of detecting values of BPSK symbols, it would have been obvious for Hammons' system to detect values only based on a real-valued vector.

As to the assertion with respect to equations (1) and (2) of Hammons, the Official Action appears to be asserting that any complex vector includes a pair of real-valued vectors that form the real and imaginary parts of the complex vector. Even if this assertion is accurate, however, Hammons still does not teach or suggest detecting the values of symbols as a function of the real-valued vector into which the received values are directly combined, where the function is devoid of any complex matrices, as also recited by amended independent Claim 1 (see, e.g., equations 12 and 13 of the present application). At a minimum, the Official Action's assertion ignores the fact that even in the case of BPSK symbols, the received signal still has complex components attributed to a complex path gain and complex Gaussian noise. *See*, e.g., Hammons, equation (1) (including complex path gain α_{ij}, and complex Gaussian random variable [n_i^j]); and equation (2) (including complex variables n_i^j and α_{ij}).

For purposes of further illustration, Applicant notes that Hammons discusses its system and method with respect to a flat-fading channel, while the present application discusses its system and method with respect to a multipath fading channel. As Hammons clearly says in paragraph [0011] and with respect to equation (1), the α_{ij} is "the complex path gain from transmit antenna i to receive antenna j." Compare this with at least equation 1 (and equation 4) in the present application, which clearly shows that the path between transmit antenna m and receive antenna l is a multipath channel. This presents the present application in a totally

different perspective than Hammons. The present application deals with intersymbol interference due to a multipath channel, while Hammons does not address this problem.

In response to the foregoing, the final Official Action goes to great lengths to summarily discount Applicant's arguments by characterizing those arguments as being directed to Hammons teaching away from and being non-analogous to the claimed invention; and by asserting such arguments are not relevant to whether a reference anticipates (under 35 U.S.C. § 102) a claim. This line of reasoning, however, is principally faulty in that the Official Action does not allege that Hammons anticipates any of the claims, but as indicated above, alleges that Hammons renders the claims obvious. Thus, to the extent Applicant's former arguments may be characterized as being directed to Hammons teaching away from or being non-analogous to the claims, those arguments are in fact relevant. And in this regard, Applicant further notes the Office Action's tacit concession that Hammons is concerned with different design issues than the claimed invention. *See* final Official Action of Oct. 15, 2008, page 2 ("Although Hammons maybe is concerned about different design issues than the instant application (as pointed out by applicant), it does not necessarily mean that Hammons failed to anticipate the claimed invention.").

Moreover, Applicant notes that the Office Action recognized Applicant's argument that even in the case of BPSK, the received signal still has complex components attributed to a complex path gain and complex Gaussian noise. The final Official Action likewise summarily dismisses these arguments as being "weak and non supportive," and then proceeds to reiterate that BPSK codes do not have complex values. *See* final Official Action of Oct. 15, 2008, page 3. To this, Applicant submits that Applicant did in fact support its argument, and reiterates this support once again by pointing directly to equations (1) and (2) of Hammons, which are alleged to support the recited directly combining received values of space-time encoded data such that the combined values form a real-valued vector free of imaginary component parts.

Applicant further submits that other than characterizing Applicant's arguments as being "weak," the Official Action provides absolutely no rebuttal to Applicant's contention that the function by which the decoder detects the values of symbols is devoid of any complex matrices. The Official Action merely reiterates that BPSK does not include complex values, but nowhere

does Hammons teach or suggest that its decoder detects the values of symbols as a function merely including real-valued BPSK codes. Again, at the receiver, Hammons clearly discloses that its received signal (even in the case of BPSK) is subject to a complex path gain and complex Gaussian noise – see, e.g., equations (1) and (2).

Applicant therefore respectfully submits that amended independent Claim 1, and by dependency Claims 2-5, is patentably distinct from Hammons. Applicant also respectfully submits that amended independent Claim 11 recites subject matter similar to that of amended independent Claim 1, including the aforementioned decoding features. As such, Applicant respectfully submits that amended independent Claim 11, and by dependency Claims 12-15, is also patentably distinct from Hammons, for at least the same reasons given above with respect to independent Claim 1.

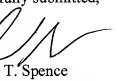
For at least the foregoing reasons, Applicant respectfully submits that the rejection of all of the pending claims as being unpatentable over Hammons is overcome.

CONCLUSION

In view of the amendments to the claims and the remarks presented above, Applicant respectfully submits that the present application is in condition for allowance. As such, the issuance of a Notice of Allowance is therefore respectfully requested. In order to expedite the examination of the present application, the Examiner is encouraged to contact Applicant's undersigned attorney in order to resolve any remaining issues. As explained above, no new matter or issues are raised by this Amendment, and as such, Applicant alternatively requests entry of this Amendment for purposes of narrowing the issues upon appeal.

It is not believed that extensions of time or fees for net addition of claims are required, beyond those that may otherwise be provided for in documents accompanying this paper. However, in the event that additional extensions of time are necessary to allow consideration of this paper, such extensions are hereby petitioned under 37 CFR § 1.136(a), and any fee required therefore (including fees for net addition of claims) is hereby authorized to be charged to Deposit Account No. 16-0605.

Respectfully submitted,



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